Discussion section: week of 28 May - 1 Jun 2018

Disc. Sec 7 p. R-65

AMS 7 30 May 18

①

#1 $\frac{7.6613 - 7.4613}{7.4613} \doteq \frac{+0.20 \text{ cm}}{7.4613 \text{ cm}} \doteq 2.7\%$

large in practical terms ~~because accumulates~~ over time

pop: all N.A. girls age 5 in 1956

sample: the observed girls

data: all possible ds

diff (age 6 - age 5)

$N = ?$ bigs

actual like IID

$n = 15$

mean $\bar{d} = 0.20$ cm

SD $s_d = 0.039$ cm

0.20, 0.4, ⋮

$M \to \infty$

mean $\mu_d = ?$

SD $\sigma_d = ?$

pop hist.

hyp. IID

sample hist

$n = 15$

mean $\bar{d} = ?$ (ex. 0.21)

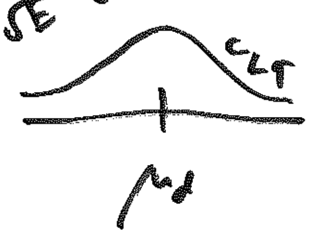
long run mean: EV of $\bar{d} = \mu_d$

est. long run SD: $\widehat{SE}$ of $\bar{d} = \frac{s_d}{\sqrt{n}} = \frac{0.039 \text{ cm}}{\sqrt{15}} \doteq 0.01$ cm

long run hist

μ_d

$\widehat{SE}$ 0.01^{cm} ⊛

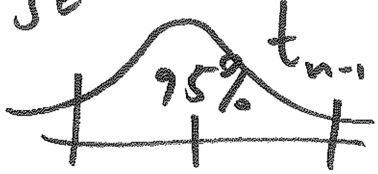


long run hist. of $\bar{d}$

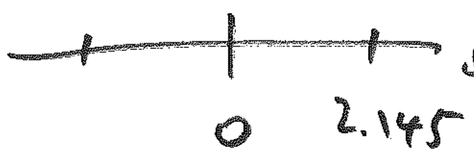
inferential summary

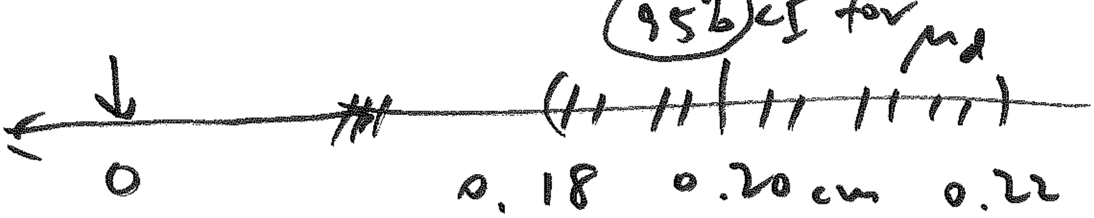
unknown pop. qty. of main interest	μ_d = pop. mean diff (age 6 − age 8) ...
estimate of μ_d	$\bar{d}$ = 0.20 cm
give or take for $\bar{d}$ as est. of μ_d	$\widehat{SE}(\bar{d})$ = 0.01 cm
95% CI for μ_d	$\bar{d} \pm (t_{n-1}^{0.95})\, \widehat{SE}(\bar{d})$ 0.20 cm ± (2.145)(0.01 cm)

(0.20 ± 0.02) cm



(*) long-run hist. of $\bar{d}$, accounting for uncertainty in σ_d





the diff. between $\bar{d}$ = 0.20 cm

& $(\mu_d)_0$ = 0 cm is stat sig. (0 not in CI)

↔ hard to attribute to unlucky sampling

↔ probably real

Disc. Sec. 8

p. (R-67) #1

practicing ✓

2 indep. samples, quant.

cont. outcome → like daphnia longispina

B G ③

$$\frac{\left(\frac{8.75}{\text{unit}}\right) - \left(\frac{9.74}{\text{unit}}\right)}{\left(\frac{9.74}{\text{unit}}\right)} = -10.2\%$$